

Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application.

Claims 5, 9, 14 and 17 were previously submitted as dependent claims.

Listing of Claims

1. (currently amended). A heating device which includes a first heating member and a second heating member placed in press contact with each other in a press contact region, wherein a recording material having formed thereon an unfixed toner image is heated by passing through the press contact region, said heating device comprising:

an internal heat supply for heating said first heating member; and

induction heating means comprising an induction heating coil disposed in an arcuate shape in a vicinity of a surface of said second heating member for heating a portion around a ~~the~~ surface of said second heating member in contact with a surface of the recording material on an opposite side of the surface having formed thereon a toner image, said induction heating means being provided outside said second heating member.

2. (original). The heating device as set forth in claim 1, wherein:

said induction heating means is provided with (a) a function for induction heating a heat generating member to be induction heated, said heat generating member being provided in said second heating member, and (b) a heat reflective function for reflecting heat radiated from said heat generating member to said heat generating member.

3. (original). The heating device as set forth in claim 1, wherein:

said first heating member includes a heat generating member to be induction heated.

4. (original). The heating device as set forth in claim 1, wherein:

said second heating member is a cylindrical rotating member; and

said induction heating means includes an induction heating coil provided in a vicinity of an outer surface section of said second heating member.

5. (currently amended). ~~The heating device as set forth in claim 4, further comprising:~~ A heating device which includes a first heating member and a second heating member placed in press contact with each other in a press contact region, wherein a recording material having formed thereon an unfixed toner image is heated by passing through the press contact region, said heating device comprising:

an internal heat supply for heating said first heating member;

induction heating means for heating a portion around a surface of said second heating member in contact with a surface of the recording material on an opposite side of the surface having formed thereon a toner image, said induction heating means being provided outside said second heating member; and

a heat reflective layer formed between said induction heating coil and said second heating member, wherein:

said second heating member is a cylindrical rotating member; and

said induction heating means includes an induction heating coil provided in a vicinity of an outer surface section of said second heating member.

6. (original). The heating device as set forth in claim 5, wherein:

said heat reflective layer is prepared by plating a surface of a resin layer which supports said induction heating coil.

7. (original). The heating device as set forth in claim 4, wherein:

a surface of said induction heating coil is plated for reflecting heat.

8. (original). The heating device as set forth in claim 4, further comprising:

heat control means for operating said induction heating means only in a state where said second heating member is rotating.

9. (currently amended). ~~The heating device as set forth in claim 8, wherein:~~

A heating device which includes a first heating member and a second heating member placed in press contact with each other in a press contact region, wherein a recording material having formed thereon an unfixed toner image is heated by passing through the press contact region, said heating device comprising:

an internal heat supply for heating said first heating member;

induction heating means for heating a portion around a surface of said second heating member in contact with a surface of the recording material on an opposite side of the surface having formed thereon a toner image, said induction

heating means being provided outside said second heating member; and

heat control means for operating said induction heating means only in a state where said second heating member is rotating, wherein:

said second heating member is a cylindrical rotating member;

said induction heating means includes an induction heating coil provided in a vicinity of an outer surface section of said second heating member;

said first heating member includes an internal heat supply; and

said heating device is provided with (a) a first warm-up mode in which said first heating member and said second heating member are heated in a state where these members are not rotating, (b) a second warm-up mode in which said first heating member and said second heating member are heated in a state where these members are rotating after said first warm-up mode, (c) a heating mode in which a member to be heated is made pass through said heating means, and a wait mode (d) in which said first heating member and said second heating member are preheated in state where these members are not rotating; and

said heat control means controls so as to operate only said internal heat supply in said first warm-up mode and said wait mode, and to operate said induction heating means only in said second warm-up mode and said heating mode.

10. (original). The heating device as set forth in claim 1, wherein:

a passing time of the member to be heated in the press contact region is not more than 23 msec.

11. (currently amended). A heating device which includes a first heating member and a second heating member placed in press contact with one another in a press contact region, wherein a member to be heated is heated by passing through said press contact region, wherein:

at least either one of said first heating member and said second heating member includes a heat generating member to be induction heated and induction heating means comprising an induction heating coil disposed in an arcuate shape in a vicinity of a surface of said heating member for induction heating said heat generating member; and

said induction heating means is provided with a heat reflective function for reflecting heat radiated from said heating member to said heat generating member.

12. (currently amended). A heating device which includes a first heating member and a second heating member placed in press contact with one another in a press contact region, comprising:

an internal heat supply provided in said first heating member;

a heat generating member to be induction heated, said heat generating member being provided in a vicinity of an outer surface of said second heating member; and

an induction heating section comprising an induction heating coil provided arcuately outside said second heating member.

13. (original). The heating device as set forth in claim 12, wherein:

said first heating member is a fixing roller, and said second heating member is a pressure roller respectively, and said fixing roller and said pressure roller are in press contact with one another at their respective side faces; and

said induction heating section is an induction heating coil provided in a vicinity of said pressure roller along its side face.

14. (currently amended). ~~The heating device as set forth in claim 13, further comprising:~~ A heating device which includes a first heating member and a second heating member placed in press contact with one another in a press contact region, comprising:

an internal heat supply provided in said first heating member;

a heat generating member to be induction heated, said heating member being provided in a vicinity of an outer surface of said second heating member;

an induction heating section provided outside said second heating member;

and

a metal plated layer formed between said pressure roller and said induction heating coil, wherein:

said first heating member is a fixing roller, and said second heating member is a pressure roller respectively, and said fixing roller and said pressure roller are in press contact with one another at their respective side faces; and

said induction heating section is an induction heating coil provided in a vicinity of said pressure roller along its side face.

15. (original). The heating device as set forth in claim 13, further comprising:

a heat control circuit which conducts said induction heating coil only in a state where said pressure roller is rotating.

16. (original). The heating device as set forth in claim 15, wherein:

said heat control circuit controls such that in a first warm-up mode in which said pressure roller is not rotating, said induction heating coil is not conducted; in a second warm-up mode in which said second pressure roller is rotating and a heating mode in which said member to be heated passes through said press contact region between said fixing roller and said pressure roller, said induction heating coil is conducted; and in a wait mode in which said pressure roller is not rotating, said induction heating coil is not conducted.

17. (currently amended). ~~The heating device as set forth in claim 16, wherein:~~

A heating device which includes a first heating member and a second heating member placed in press contact with one another in a press contact region, comprising:

an internal heat supply provided in said first heating member;

a heat generating member to be induction heated, said heating member being provided in a vicinity of an outer surface of said second heating member;

an induction heating section provided outside said second heating member;

and

a heat control circuit which conducts said induction heating coil only in a state where said pressure roller is rotating, wherein:

said first heating member is a fixing roller, and said second heating member is a pressure roller respectively, and said fixing roller and said pressure roller are in press contact with one another at their respective side faces; and

said induction heating section is an induction heating coil provided in a vicinity of said pressure roller along its side face;

said heat control circuit controls such that in a first warm-up mode in which said pressure roller is not rotating, said induction heating coil is not conducted; in a second warm-up mode in which said second pressure roller is rotating and a heating mode in which said member to be heated passes through said press contact region between said fixing roller and said pressure roller, said induction heating coil is conducted; and in a wait mode in which said pressure roller is not rotating, said induction heating coil is not conducted; and

said heat control circuit controls such that said internal heat supply of said fixing roller is conducted in said first warm-up mode and said wait mode.

18. (currently amended). A fixing device comprising:

heating device which includes a first heating member and a second heating member placed in press contact with one another in a press contact region, wherein a recording material having formed thereon an unfixed toner image is heated by passing through said press contact region between said first heating member and said second heating member, said heating device comprising:

an internal heat supply for heating said first heating member; and

induction heating means comprising an induction heating coil disposed in an arcuate shape in a vicinity of a surface of said second heating member for heating a portion around a ~~the~~ surface of said second heating member in contact with a surface of the recording material on an opposite side of the surface having formed thereon a toner image, said induction heating means being provided outside said second heating member.

19. (currently amended). A fixing device comprising a heating device which includes a first heating member and a second heating member placed in press contact with one another in a press contact region,

wherein said heating device comprises:

an internal heat supply provided in said first heating member;

a heating member to be induction heated, said heating member being provided on an outer surface of said second heating member; and

an induction heating section comprising an induction heating coil provided arcuately in a vicinity of said heat generating member outside said second heating member.

20. (original) An image forming device comprising:

heating device which includes a first heating member and a second heating member placed in press contact with one another in a press contact region, wherein a recording material having formed thereon an unfixed toner image is heated by

passing through said press contact region between said first heating member and said second heating member, said heating device comprising:

an internal heat supply for heating said first heating member; and
induction heating means comprising an induction heating coil disposed in an arcuate shape in a vicinity of a surface of said second heating member for heating a portion around ~~a~~the surface of said second heating member in contact with a surface of the recording material on an opposite side of the surface having formed thereon a toner image, said induction heating means being provided outside said second heating member.

21. (currently amended). A fixing device comprising a heating device which includes a first heating member and a second heating member placed in press contact with one another in a press contact region,
wherein said heating device comprises:

an internal heat supply provided in said first heating member;
a heating member to be induction heated, said heating member being provided on an outer surface of said second heating member; and
an induction heating section comprising an induction heating coil provided arcuately in a vicinity of said heat generating member outside said second heating member.

22. (currently amended). A heating method of heating a recording material by making the recording material having formed thereon an unfixed toner image pass

through a press contact region in which said fixing roller and said pressure roller are in press contact with each other, the method comprising the steps of:

heating said first heating member by an internal heat supply provided in said first heating member; and

induction heating, with an induction heating coil provided with an arcuate shape, a portion around of a surface of said first heating member adjacent to the arcuate shaped induction coil, which surface is to be in contact with a surface of the recording material on an opposite side of the surface having formed thereon a toner image.